

HOW Y'ALL DUNE ?



FIG. 46. Looking south along shore at Miami Beach. *Ipomoea pes-caprae* in foreground, *Uniola paniculata* and cocoanut trees at right. Aug. 17, 1923.

Florida Department of Environmental Protection



Office of Communications

Public Service Meeting March 21, 2013

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Deputy Director
FDEP Division of Water Resource Management















Sand

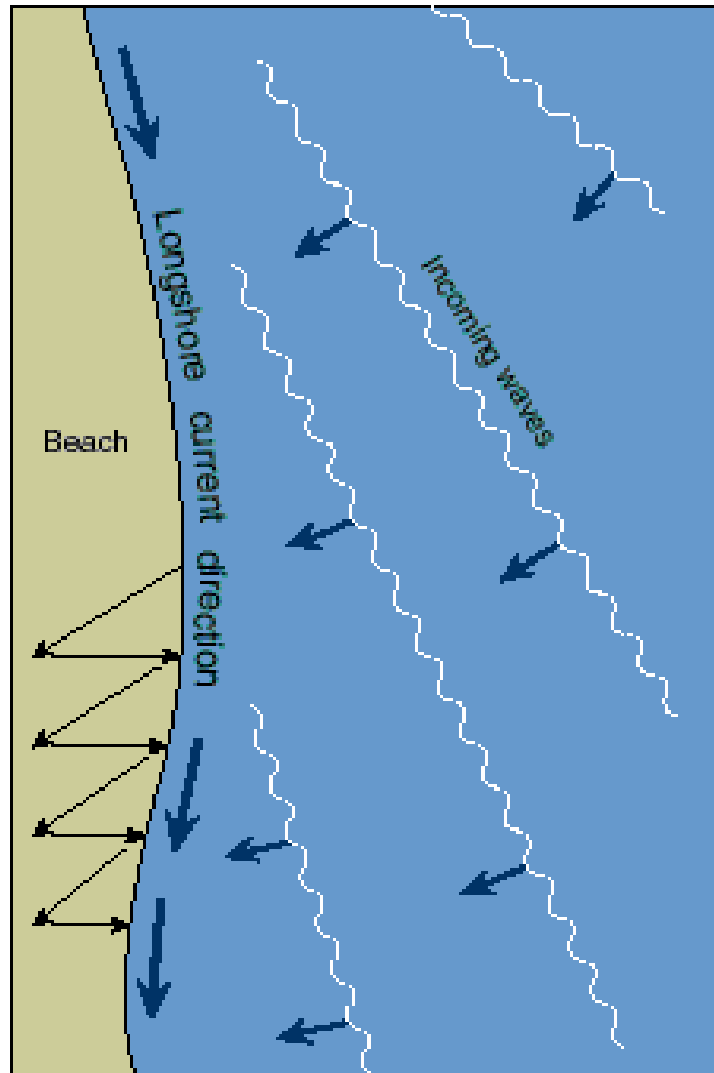
Compatibility

- Grain size
- % silt
- Color

Proximity

TEXTURAL FEATURES OF SEDIMENTARY ROCKS		
GRAIN SIZES	GRAIN SHAPES	GRAIN ARRANGEMENTS
<p>Grains visible; larger than sand.</p>  <p>Gravel-sized</p>	 <p>Angular Grains</p>	 <p>Poorly Sorted</p>
<p>Grains visible; Like in a sandbox.</p>  <p>Sand-sized</p>		
<p>Grains barely visible; feels gritty.</p>  <p>Silt-sized</p>		
<p>Grains not visible; feels smooth; dull luster on freshly broken surface.</p>  <p>Clay-sized</p>	 <p>Rounded Grains</p>	 <p>Moderately Sorted</p>
<p>Crystals not visible; feels smooth; shiny luster on freshly broken surface.</p>  <p>Microcrystalline</p>	 <p>Well-Rounded Grains</p>	 <p>Well Sorted</p>
<p>Aggregate of visible crystals.</p>  <p>Crystalline</p>		

Sand Movement



FL East Coast:
Sand flows North



South

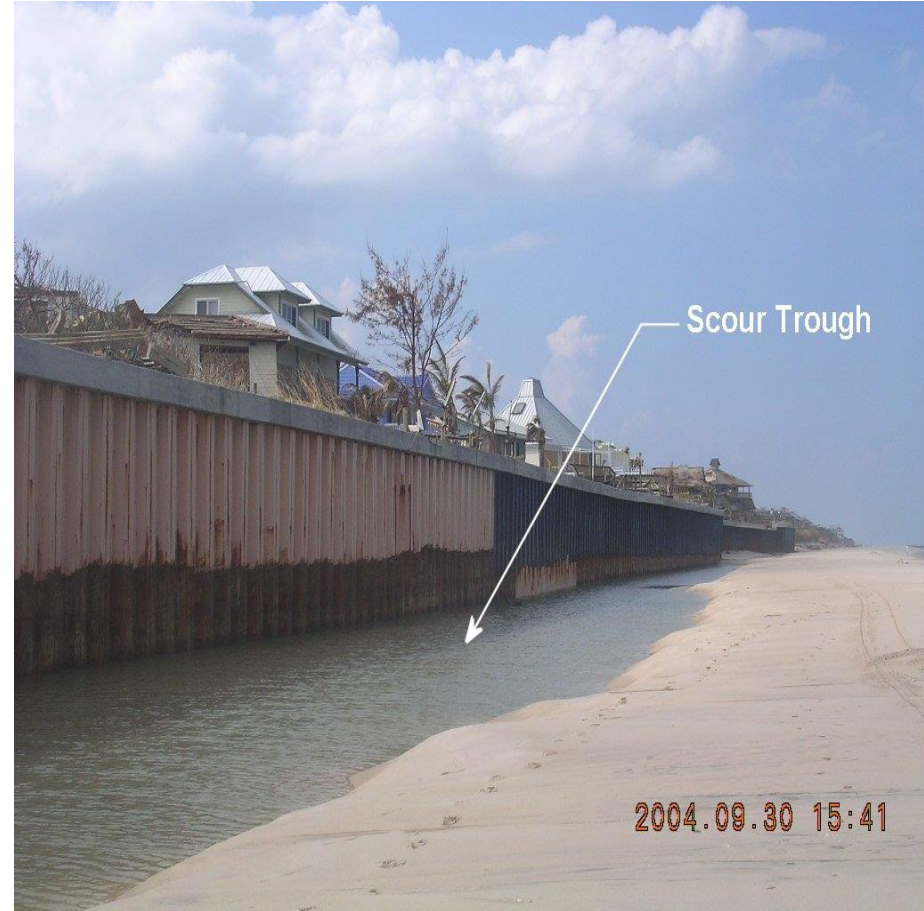
Disruptions:

- Improved inlets
- Armoring / Structures
- Storms

Causes of Erosion



Improperly sited
structures - Armoring



Causes of Erosion



Improperly
designed
structures:
Groins,
breakwaters



Causes of Erosion



Storms

Causes of Erosion



Improved Inlets: Lake Worth

Beach Restoration and Nourishment



Midtown Beach 2003 Construction Project

Dune Construction



Reach 8 (April 2006)

PLANT ASSOCIATIONS - SOUTH FLORIDA

1) COASTAL UPLANDS a) Beach/Dune



STRAND ZONE (Scrub): palmettos,
and shrubby species

PIONEER ZONE: grasses and vines

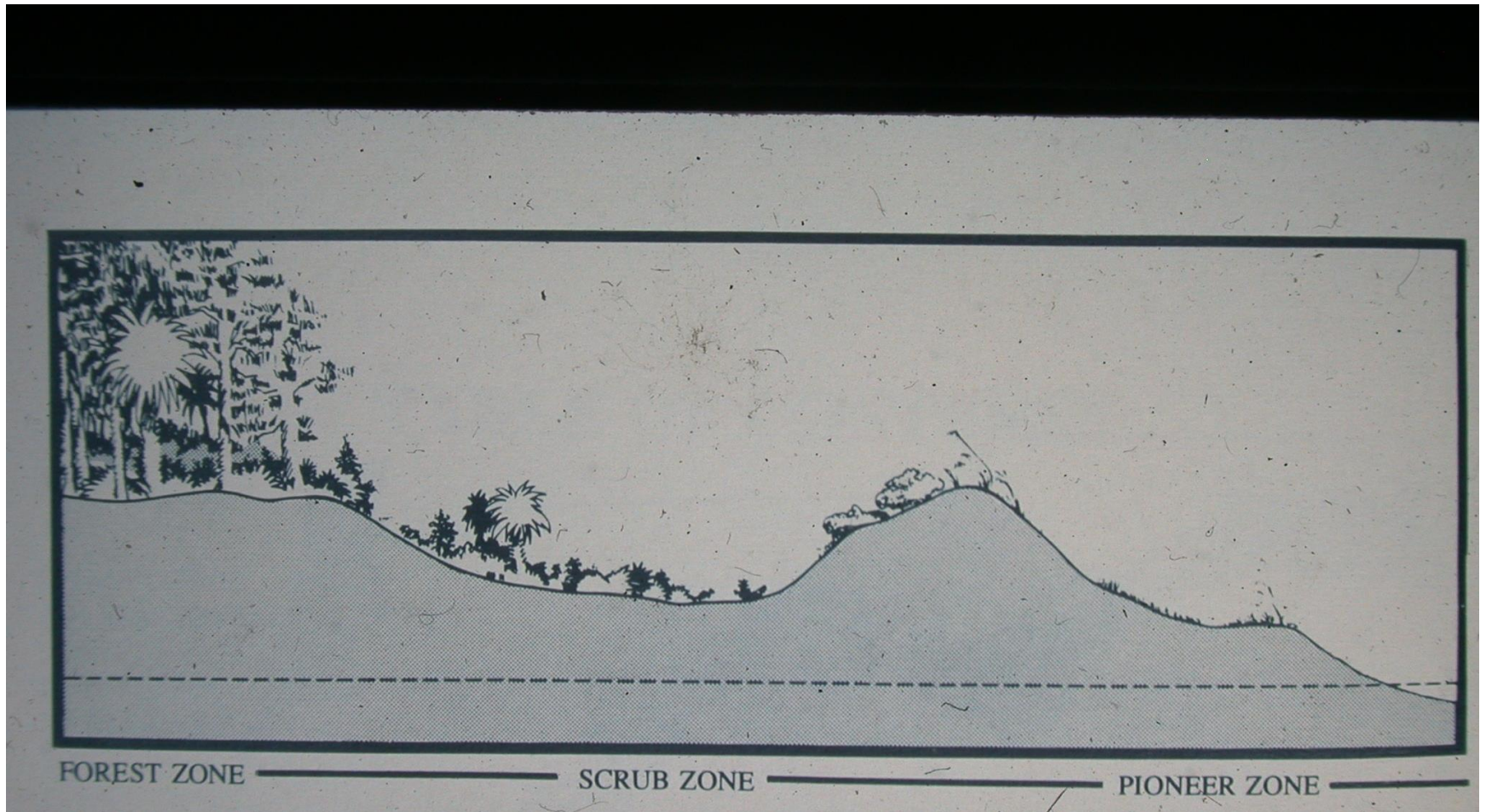
HISTORICAL NATURE OF THE DUNES WAS STRAND DOMINATED BY PALMETTOS



THIS
ENTIRE BLOCK
EXCLUSIVE SALE
Hollandale Realty Co.
BIRMINGHAM, ALA.
JANUARY 1934



ALMOST ALL COASTAL DEVELOPMENT IS IN THE STRAND OR PIONEER ZONE



1920'S ON JUPITER ISLAND



CANAVERAL NATIONAL SEASHORE

One of the few remaining complete natural barrier island ecosystems..
26 miles with minimal human impact.



Juno Dunes



Natural Area



A photograph of a beach scene. On the left, a sandy dune rises from the beach, topped with green vegetation and a white, multi-story building. A wooden walkway leads down from the dune to a wooden lifeguard stand situated on the edge of the beach. The ocean is on the right, with white-capped waves breaking onto the shore. The sky is overcast and grey. The text "HOW DO DUNES FUNCTION?" is overlaid in the center-right of the image.

HOW DO DUNES FUNCTION?

Sand is captured and stored during calm weather.



A close-up photograph of beach grasses growing in sand. The grasses have long, thin, golden-brown blades and a dense network of roots extending deep into the sand. The sand is light-colored and appears slightly disturbed. The text "Deep roots resist wave scour during storms." is overlaid in white at the bottom of the image.

Deep roots resist wave scour during storms.

H. Irene overwash of 6 month old planting.





Unvegetated area lost most of newly installed
\$45/cubic yard trucked sand.



Wave damage stopped by dune growth.



Frances/Jeanne impact in Ft. Pierce.



Most vegetation and about 12,000 cy sand deposited upland onto roads and parking lots.



The frontal dune planting was completed by mid March, the back dune by the end of April.



Areas planted in summer are fully established and already trapping windblown sand.



This dune was fully established by late September, producing seed, and captured a foot of sand from Wilma with no damage.















Dune benefits for wildlife..

Photo by M. Simmons
Eglin AFB, 12 June 2011



FWC Nesting Beach Survey Training Workshop 2012

Anne Meylan, Blair Witherington, and Beth Brost





LOGGERHEAD

Threatened



GREEN

Endangered



LEATHERBACK

Endangered



KEMP'S RIDLEY

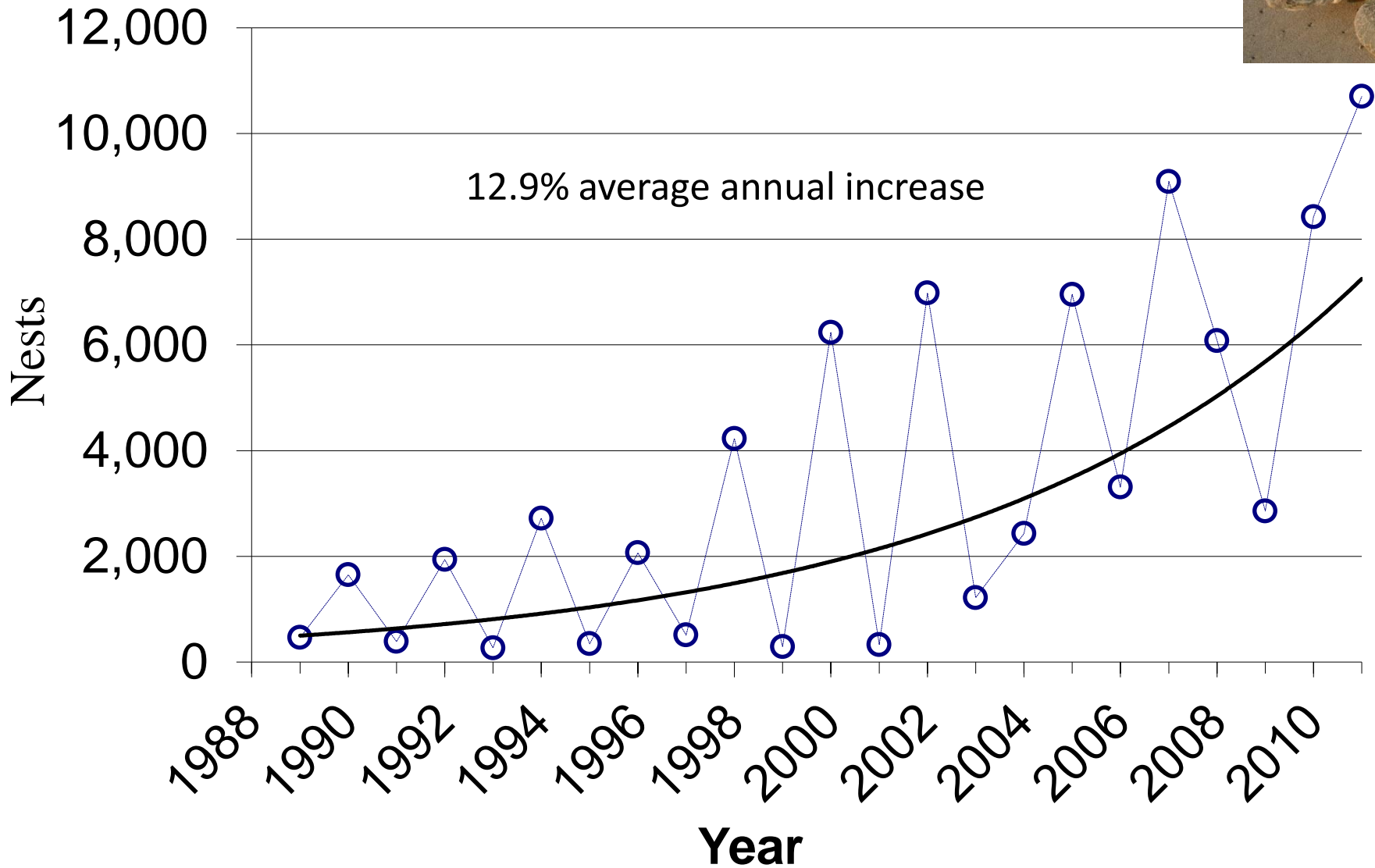
Endangered



HAWKSBILL

Endangered

Green turtle nests on Florida core index beaches



**Risk factors associated with sampled
green turtle nests in 2011, N = 374**

**11 Impacted by
Other Mortality Factors**

82% Roots
18% Poached

3%

**81 Impacted
by Predators**

22%

Major Predators

Raccoon

Fox

Ghost Crabs

58%

**219
Undisturbed**

**70
Washed Out**

18%



Beach-nesting Seabirds & Shorebirds



Man made dunes included least tern nesting feature..adopted within the first year by birds.















INVASIVE EXOTIC SPECIES REMOVAL







100 square yard area hand cleared by volunteers.





Coinvine emerging as new invasive on Miami Beach.



500 square yard coinvine footprint of one three year old plant.









SUPPLEMENTAL FERTILIZER CAN DOUBLE THE GROWTH

- We added a 120 day fertilizer to each planting hole to ensure establishment of the new plants, however the application of regular turfgrass fertilizer, at the same rate as for your lawns will increase the growth of the dune, reduce the time to complete grow in, and increase the density of the erosion resisting root system.
- Lesco 16-4-8 fertilizer is available at Home Depot for about \$16.00 and one bag will cover about 8000 square feet. That's 400 feet of shoreline where the new planting is 20 feet wide.(it varies)
- Home Depot also sells a hand held fertilizer spreader for about 10 bucks.
- **We can apply fertilizer to speed up growth of your dune, at cost of \$35.00 per bag. Call 561-649-8318.**

16-4-8

LESCO® PROFESSIONAL TURF FERTILIZER
For use in Rotary Spreaders Only

50 lb COVERS 8,000 sq ft

DIRECTIONS FOR USE: This LESCO product is a professional quality turf fertilizer for use on all lawn areas. The best results with this product are obtained when it is applied to actively growing grass, and watered into the turf soon after application. Avoid mowing immediately following application to prevent pick-up.

For best results, sweep or blow the fertilizer off walks and painted surfaces following application to avoid discoloration.

Recommended applications are at the rate of one pound of nitrogen per 1,000 sq ft. Actual rates and timing of applications will vary with weather, soil and turf conditions.

For additional product assistance, call LESCO, Inc. in Cleveland, Ohio at 1-800-321-5325.

COVERAGE: 50 pounds of LESCO 16-4-8 Fertilizer covers approximately 8,000 sq ft at the application rate of one pound of nitrogen (6.25 pounds of fertilizer) per 1,000 sq ft.

ROTARY SPREADER SETTINGS: Apply LESCO Fertilizers and Combination Products only with a rotary spreader. The following rotary spreader settings are approximate for the application rates of one pound of nitrogen per 1,000 square feet. You may need to adjust the setting depending on walking speed, spreader condition and product.

ROTARY SPREADER	SETTINGS
LESCO	#18
SCOTT'S® R8A	L
Cyclone® or Spyker®	4 1/4
LESCO Pendulum	34
Lely®	5 II

GUARANTEED ANALYSIS

TOTAL NITROGEN (N)..... 16.00%

1.55% Ammoniacal Nitrogen

14.45% Urea Nitrogen*

AVAILABLE PHOSPHATE (P₂O₅).....4.00%

SOLUBLE POTASH (K₂O).....8.00%

SULFUR (S) Total.....2.45%

2.45% Free Sulfur (S)

COPPER (Cu) Total.....0.05%

0.005% Water Soluble Copper (Cu)

IRON (Fe) Total.....1.00%

0.01% Water Soluble Iron (Fe)

MANGANESE (Mn) Total.....0.40%

0.05% Water Soluble Manganese (Mn)

ZINC (Zn) Total.....0.10%

0.008% Water Soluble Zinc (Zn)

DERIVED FROM: Polymer Coated Sulfur Coated Urea, Ammonium Phosphate, Muriate of Potash, Copper Sulfate, Iron Sulfate, Manganese Sulfate, Zinc Sulfate.

CHLORINE (Cl) Max.....6.00%

*7.20% Slowly Available Nitrogen from LESCO Poly Plus® Sulfur Coated Urea.

F1560

WARRANTY

LESCO, Inc. warrants that this product conforms to the analysis on its label. When used in accordance with label directions, under normal conditions, this product is reasonably fit for its intended purposes. Since time, method of application, weather, plant and soil conditions, mixture with other chemicals, and other factors affecting the use of this product are beyond our control, no warranty is given concerning the use of this product contrary to label directions or under conditions which are abnormal or not reasonably foreseeable. The user assumes all risks of any such use.

Information concerning the raw materials composing this product can be obtained by writing to: LESCO, Inc., Attn: RA Dept, 1301 East 9th Street, Suite 1300, Cleveland, Ohio 44114-1849, referring to the item number found on this bag.

Information regarding the contents and levels of metals in this product is available on the Internet at <http://www.regulatoryinfo-a1.com>

LESCO and Poly Plus are registered trademarks and the sweeping design is a trademark of LESCO Technologies, LLC. SCOTT'S is a registered trademark of The SCOTT Company. Cyclone and Spyker are registered trademarks of Spyker Spreaders, LLC. Lely is a registered trademark of C Van Der Lely N.V.

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NET WEIGHT 50 lb (22.7 kg)

Made in U.S.A. Distributed by LESCO, Inc. • 1301 East 9th Street • Cleveland, OH 44114-1849

#011695

NAME	CAS #
Urea	57-13-6
Calcium Carbonate	471-34-1
Sulfur	7704-34-9
Diammonium Phosphate	7783-28-0
Potassium Chloride	7447-40-7



(01)00758073116950

We strongly discourage the use of artificial aids to trap sand. Natural dune vegetation is cheaper, works better, and does not degrade to become hazardous in the sand, like old fencing.



COMPREHENSIVE HABITAT RESTORATION



A photograph of a sandy beach. The sand is light-colored and covered with numerous small, white, shell-like fragments. There are several clumps of low-lying, green and brown vegetation, likely beach stars, scattered across the surface. A small, blue, rectangular object is visible on the left side of the image. The text "BEACH STAR" is overlaid in the bottom left corner.

BEACH STAR

**Bahama senna is a showy
shrub that flowers all year.**



Yellowtop is another colorful backdune species we use as an accent .







Bay Cedar, *Suriana maritima*



Seacoast Beach Elder
Iva imbricata



Prickly Pear Cactus, *Opuntia stricta*



Burrowing four o'clock
Okenia hypogaea

(Endangered—Florida)











Sea Oxeye Daisy, *Borichia frutescens*



Coastal Vervain, *Verbena maritima*,







Wilma's 100 mph+ winds destroyed palms but had no impact on our native dune installation.



Seaside Gentian,
Eustoma exaltata



Jacquemontia pentantha





A photograph showing a dense, low-growing field of Sea Lavender (Argusia gnaphalodes). The plants have a silvery-green, needle-like foliage that forms a thick carpet. Some taller, darker green plants are visible in the background and foreground, providing contrast. The overall scene is a natural, outdoor setting with the plants growing closely together.

Sea Lavendar, *Argusia gnaphalodes*

Blanket Flower, *Gallardia pulchella*





THANKS FOR LISTENING

Rob Barron

